Chronic stable angina

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Stable ischemic heart disease

- Clinical presentations
  - angina
  - anginal equivalents
  - (silent ischemia)

Chronic stable angina

"Stable symptoms (usually chest discomfort)

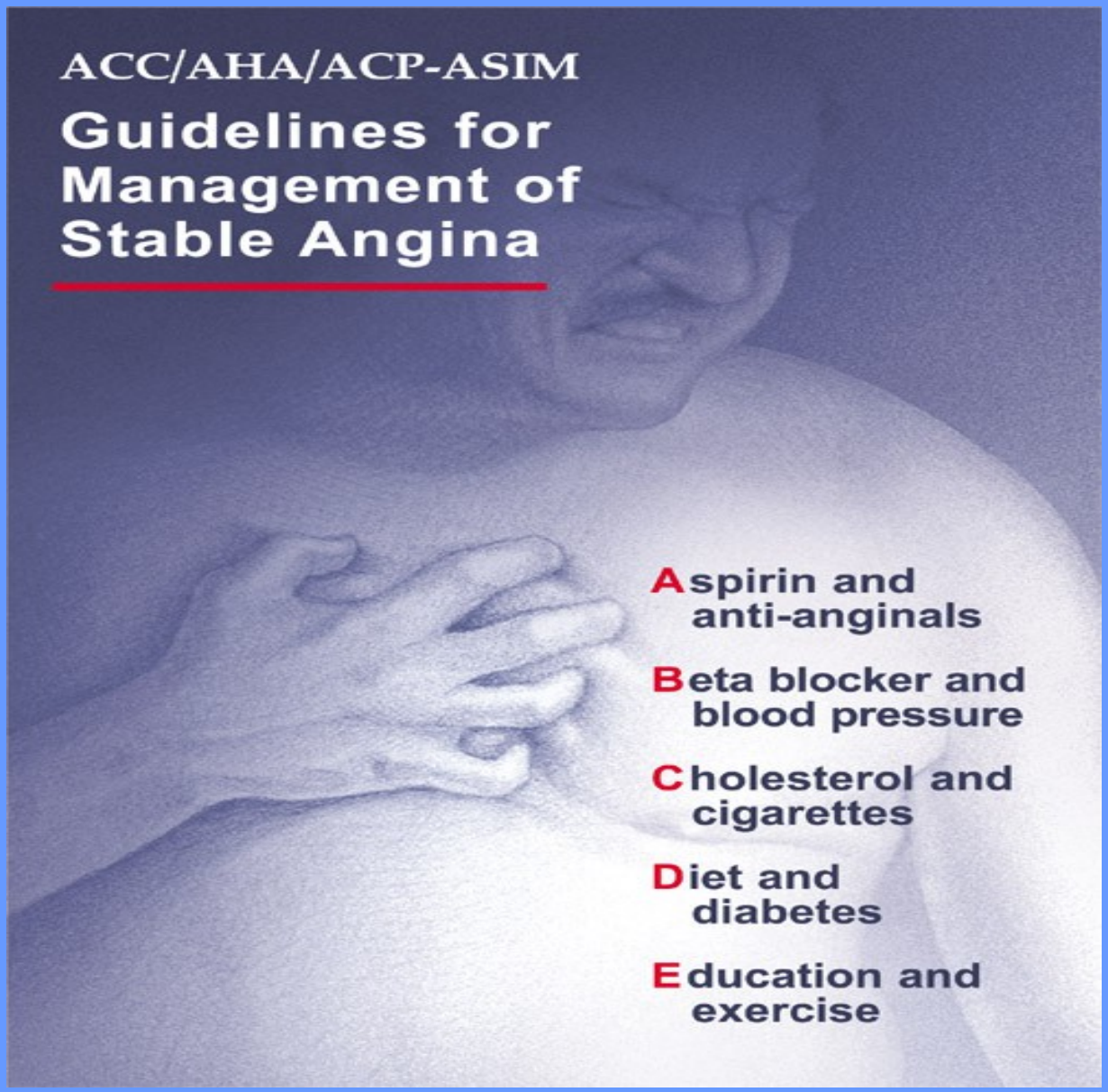
attributed to ischemic heart disease."

Importance of ischemia

- symptoms
- mi
- death

Goals of Management

- Feel better
- Live longer


ACC/AHA/ACP-ASIM
Guidelines for Management of Stable Angina
Aspirin and anti-anginals
Beta blocker and blood pressure
Cholesterol and cigarettes
Diet and diabetes
Education and exercise

JACC, June 99

General approach to therapy

1. Precipitating factors
   - hr (hct, thyroid, a/r’s)
   - contractility (hct, tsh)
   - wall stress (htn, chf, valves)
2. Meds
   - Asa, ntg sl
   - B-blocker, Ca-blocker
   - Long acting nitrates
3. Lifestyle changes
   - risk factor modification
   - stress reduction
   - exercise

Outline

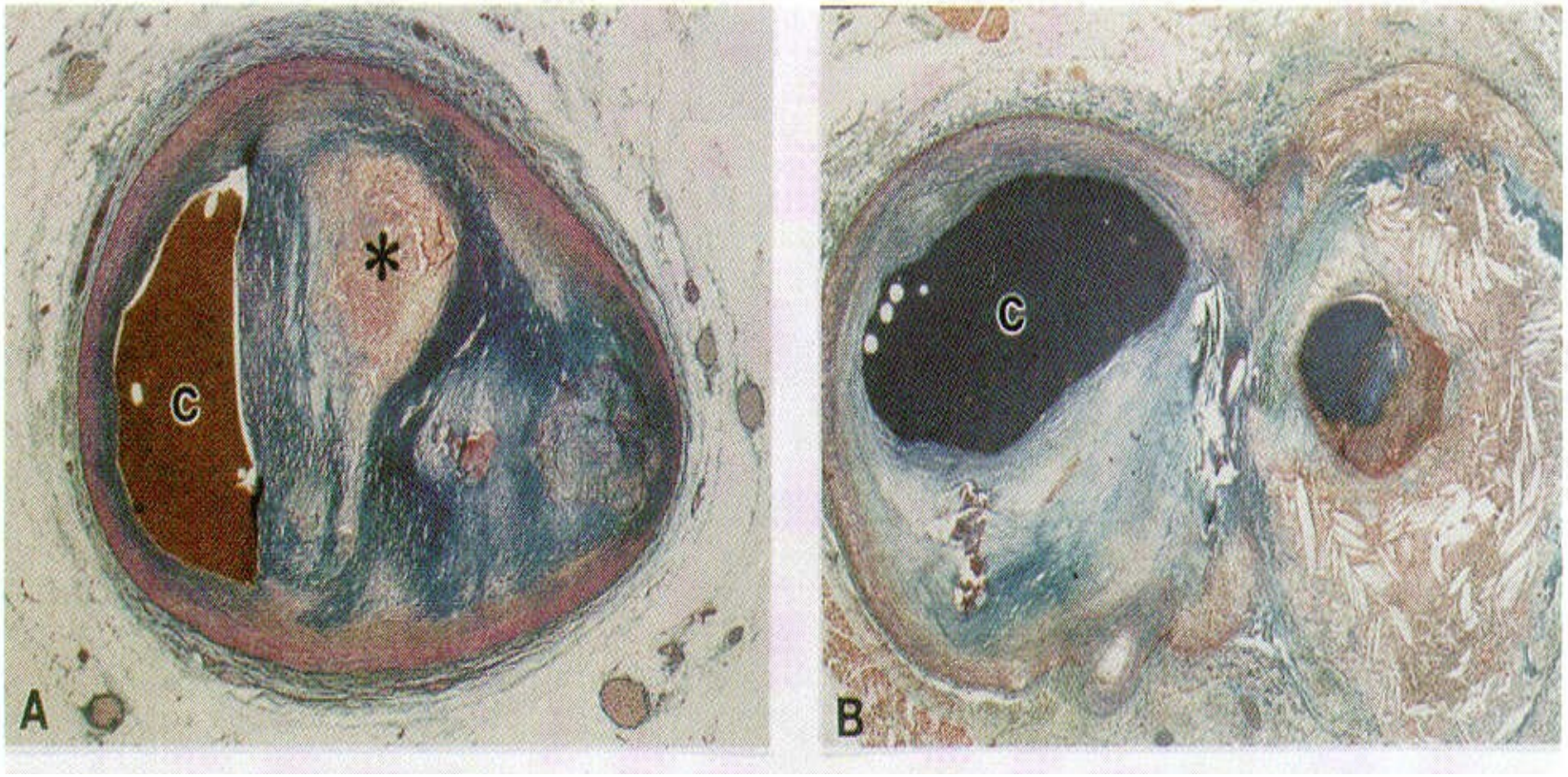
- Pathophysiology
- Risk stratification
- Treatment

Causes of stable ischemia:

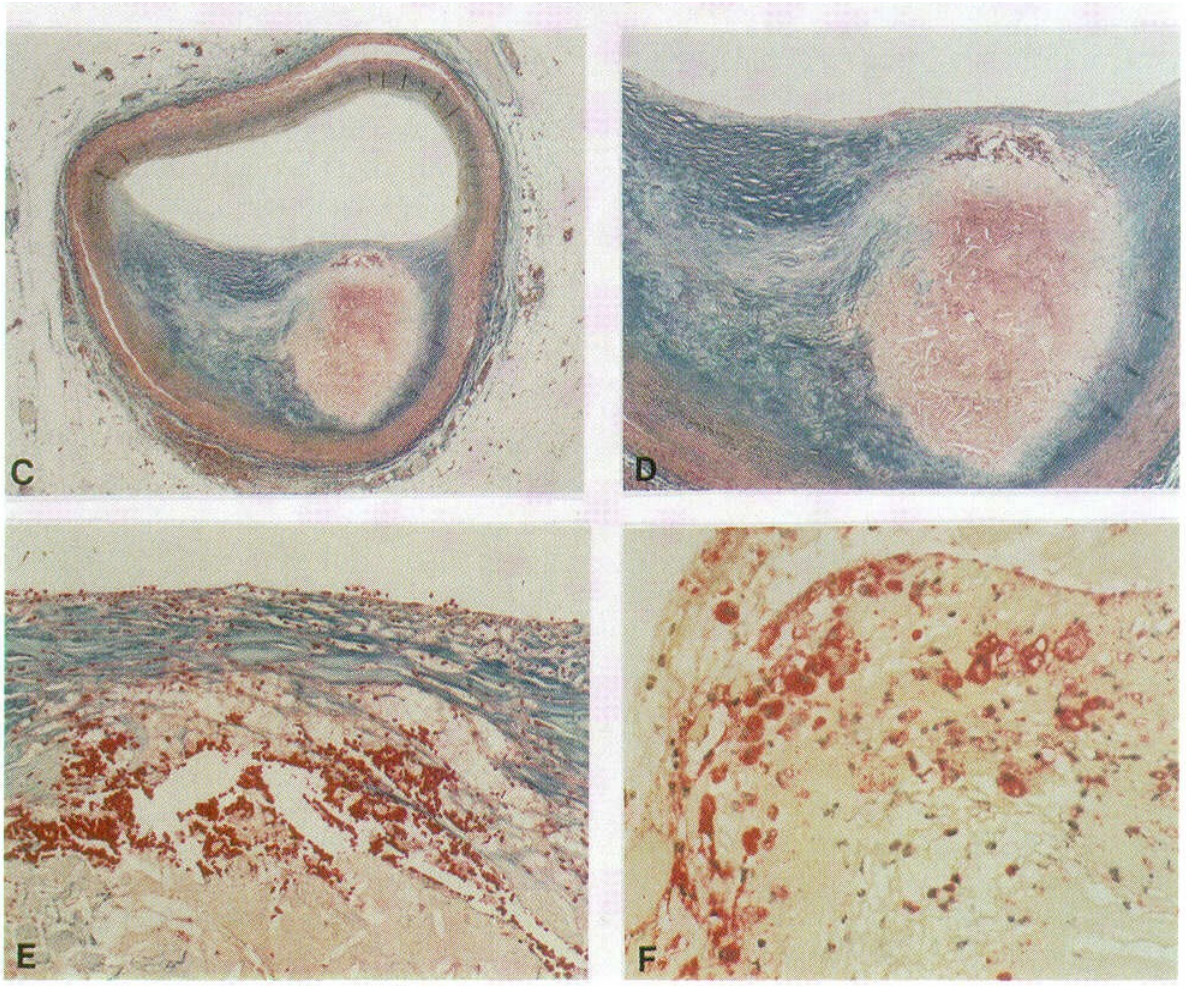
- Stenosis (↓ supply)
  - plaque
  - endothelial dysfunction
    - (vasoconstriction)

- Stresses (↑ demand)
  - hr
  - pressure
  - contractility

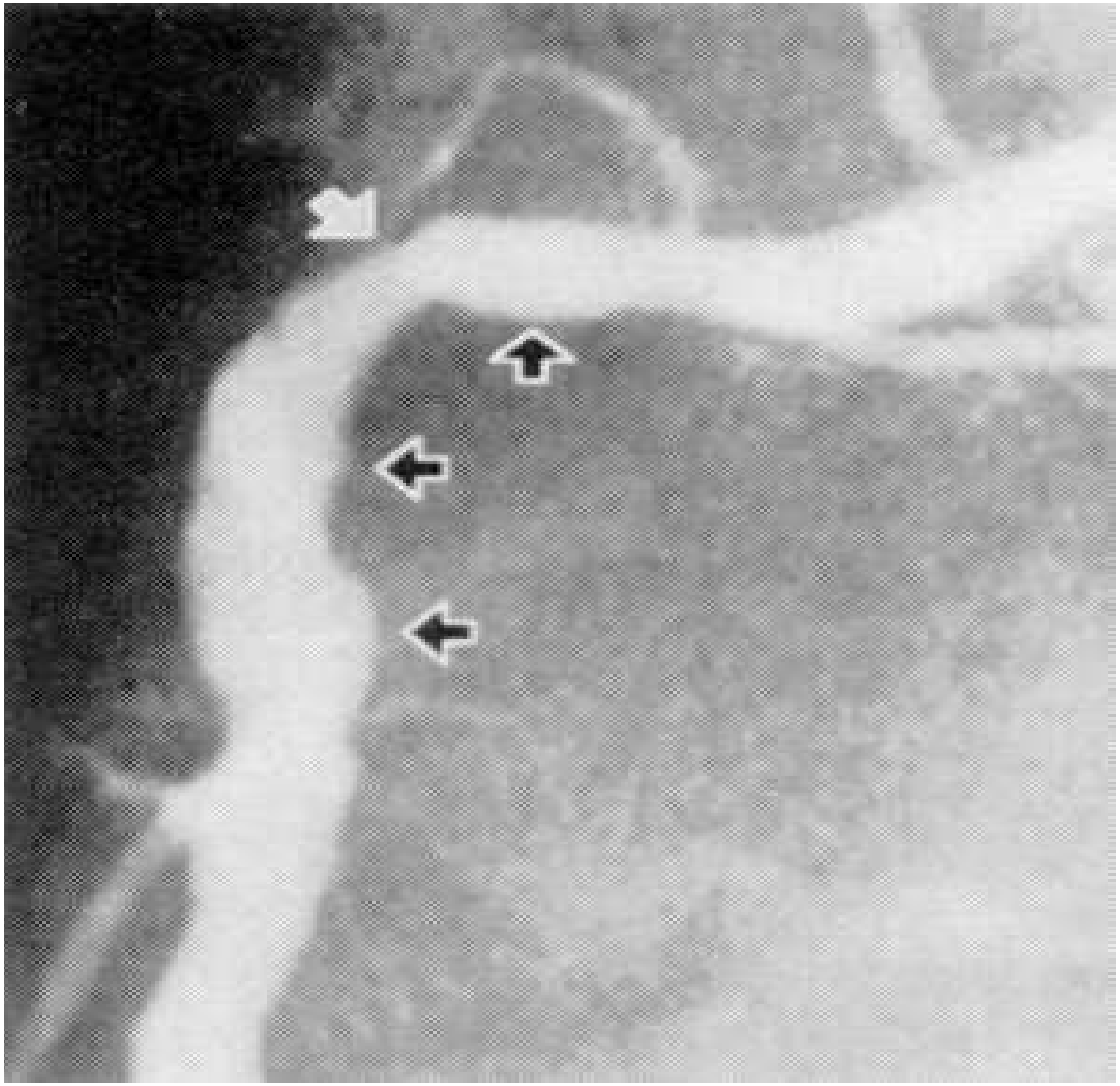
Coronary plaques



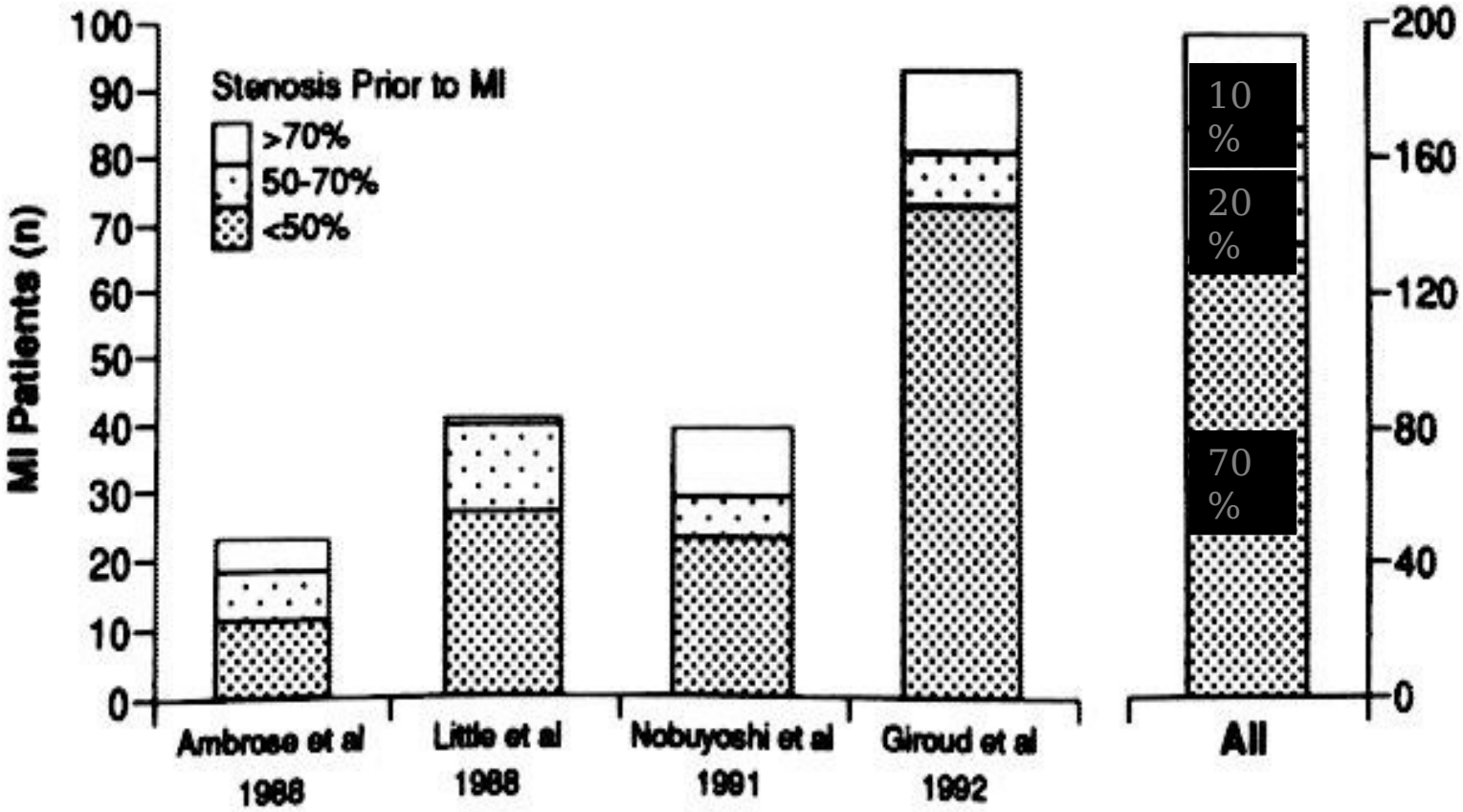
plaque rupture



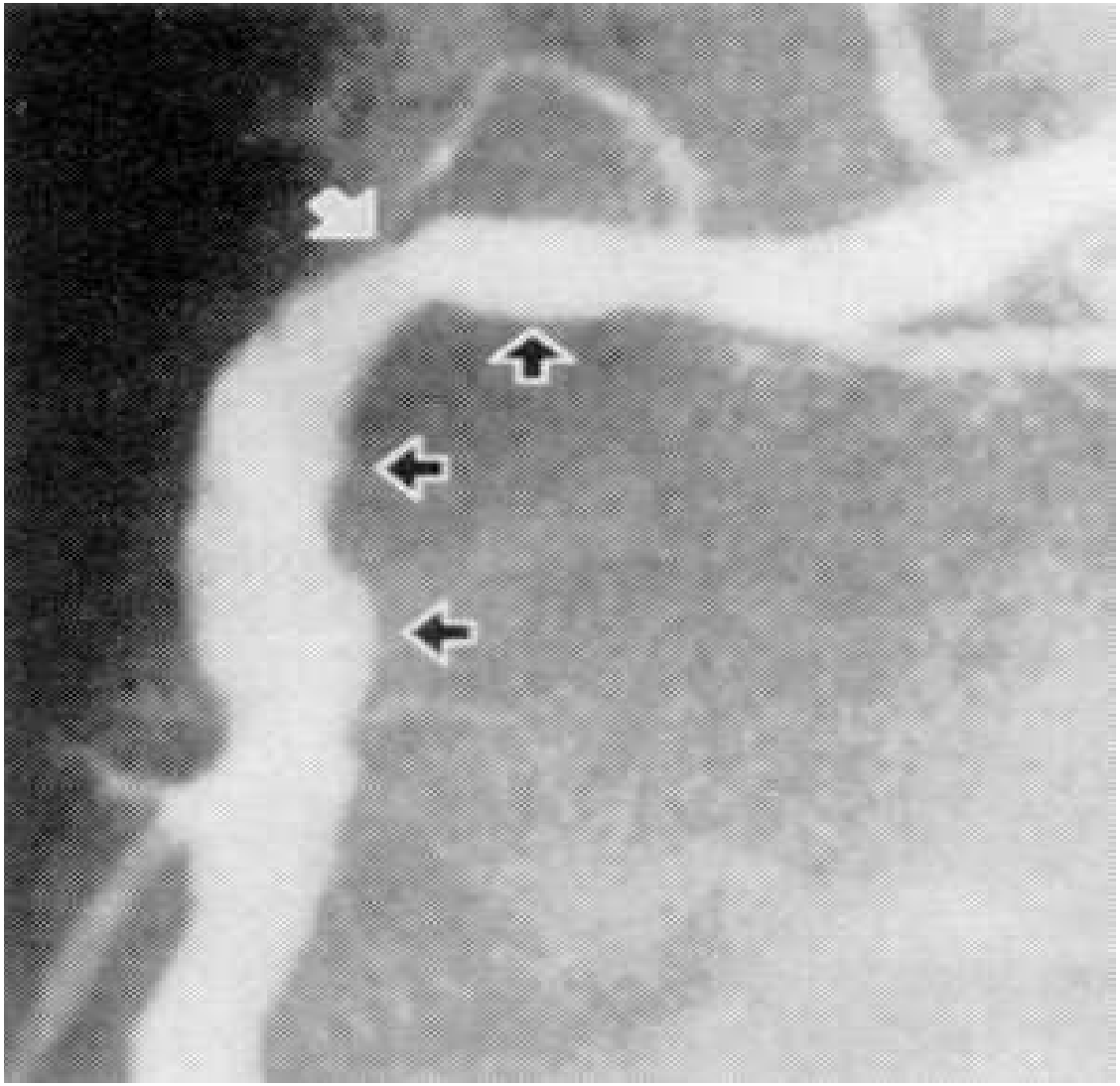
Coronary angiography



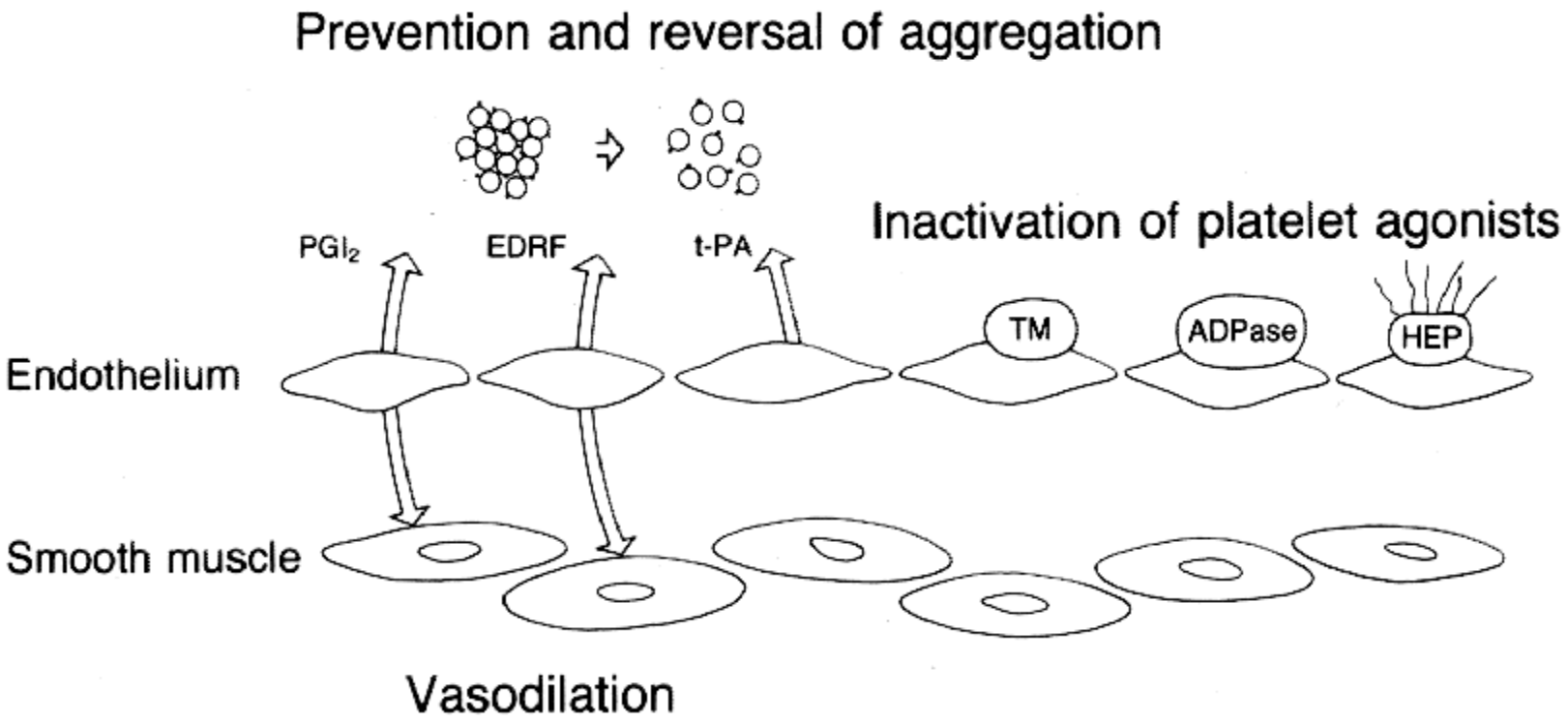
Predicting the “culprit lesion”



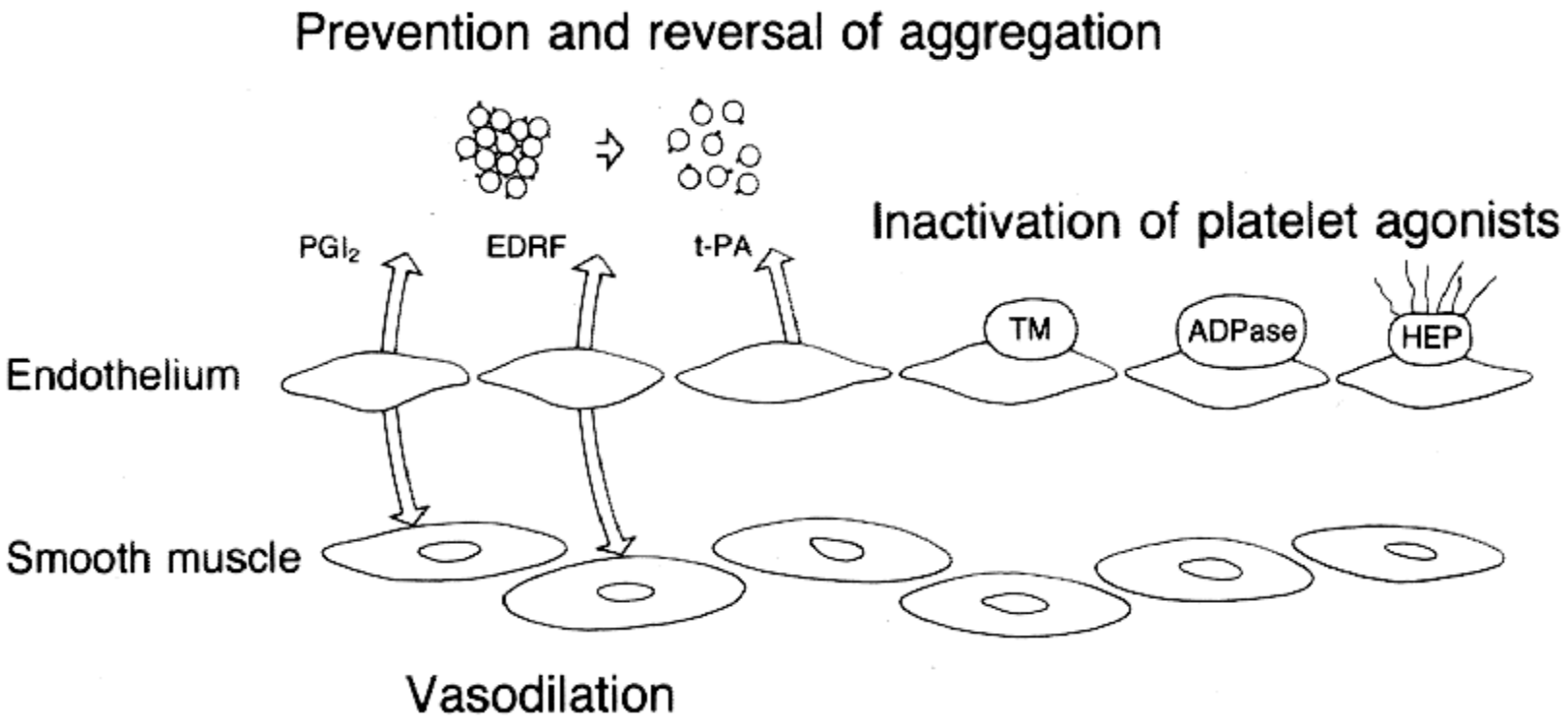
Coronary angiography



Endothelial function



Endothelial function



Endothelium dependent relaxing factor

- Effects
  - vasodilation
  - antithrombotic
  - anti-inflammatory

- Release stimulated by:
  - blood flow
  - thrombin, ADP, 5HT
  - Ach

Endothelial dysfunction

- decreased release of EDRF in CAD

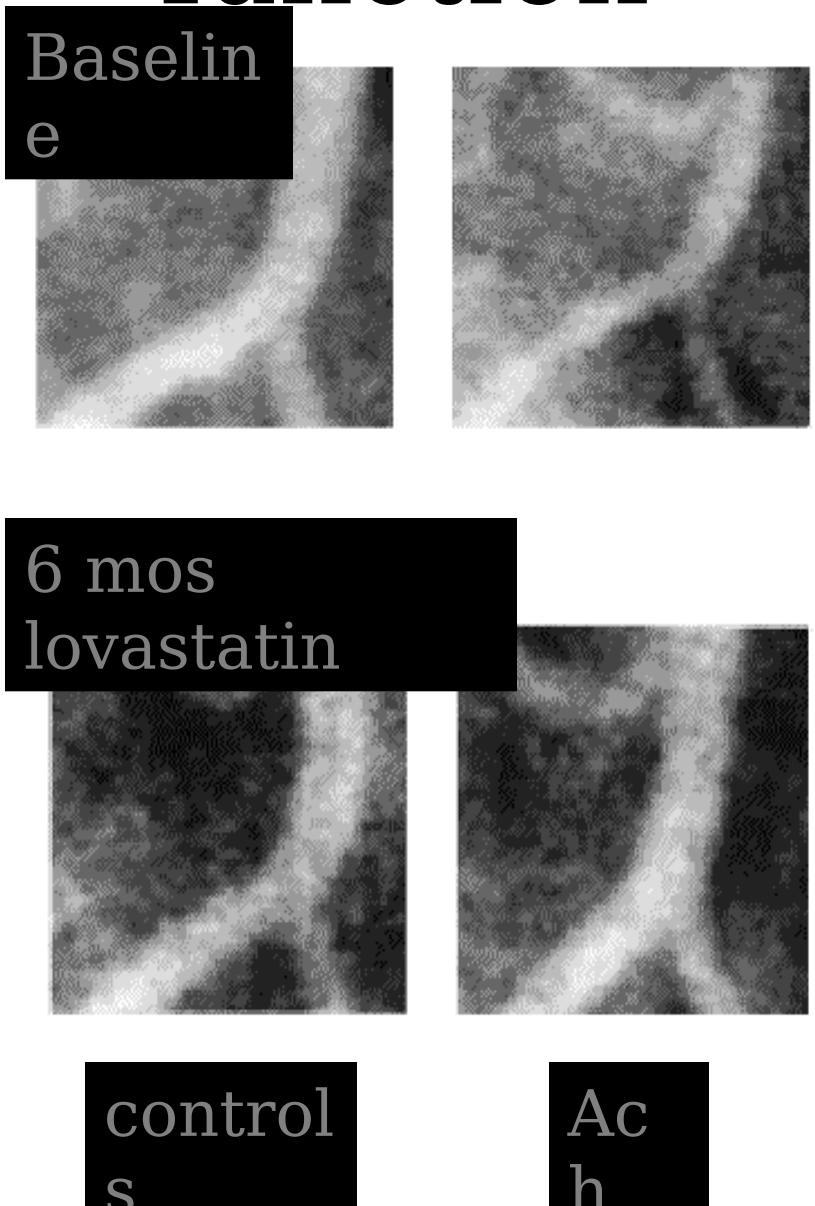
- allows unopposed - vasoconstriction
  - thrombosis
  - inflammation

Dysfunctional endothelium

control

Ach injection

Recovery of endothelial function



AVERT

(Atorvastatin versus Revascularization Tx)

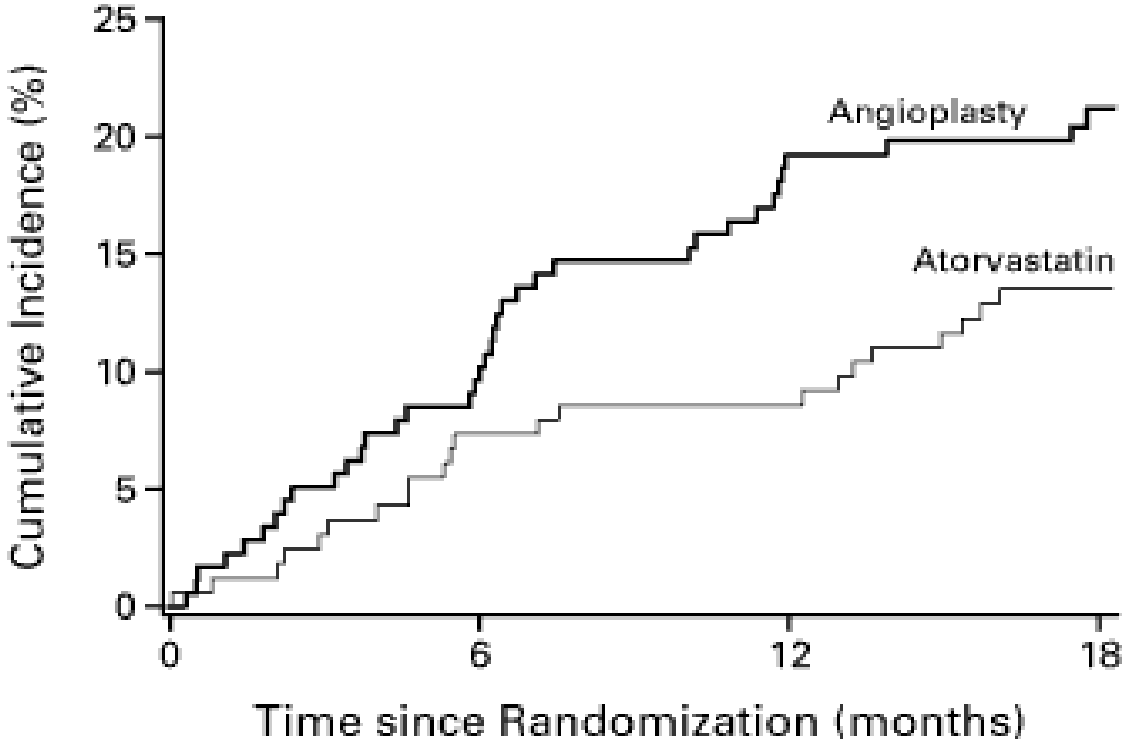
(NEJM, July 99)

- ~350 pts with mild-mod angina
  - LDL ~145
- Tx
  - Atorvastatin, 80mg/d → (LDL 77)
  - PTCA → (LDL 119)

AVERT

- Ischemic events over 18 mos
  - cardiac death
  - mi
  - stroke
  - coronary revascularization
  - worsening angina

AVERT results



Risk stratification

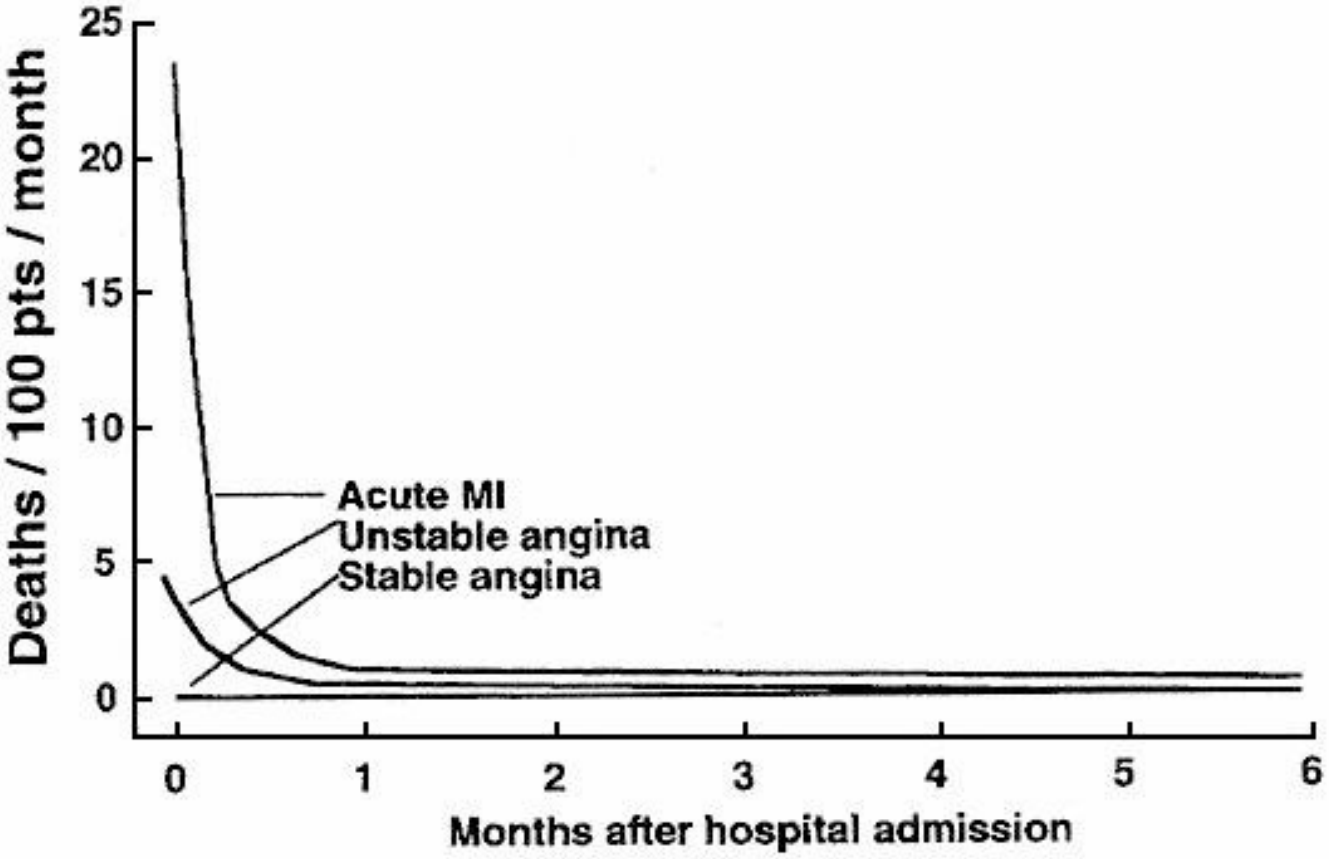
- **DEATH**
- MI
- “cardiac events”

Natural history of stable angina

- Most data from 1960-70
  - cabg 1967
  - ptca 1977

- Mortality
  - overall ~ 3-4%/yr

Natural history of stable angina



Risk stratification:

- “Low risk”: <1% deaths/year
- “Intermediate risk”: 1-3%/year
- “High risk”: >3% deaths/year

Risk stratification

- Angiography is “gold standard.”
- “High risk” patients identified by other means may fit into angiographic categories which benefit from revasucularization.

Risk stratification

- Prognostic factors:
  1. **LVF**
  2. **Ischemia**
  3. arrhythmias

- How assessed:
  - clinical (h&p, ecg)
  - noninvasive (echo, stress tests)
  - cardiac cath

Risk stratification

- General principles:
  - the worse the disease, the more significant the benefit of therapy.
  - no method can identify unstable plaque, but presence of more high-grade disease may imply more aggressive, unstable disease overall.

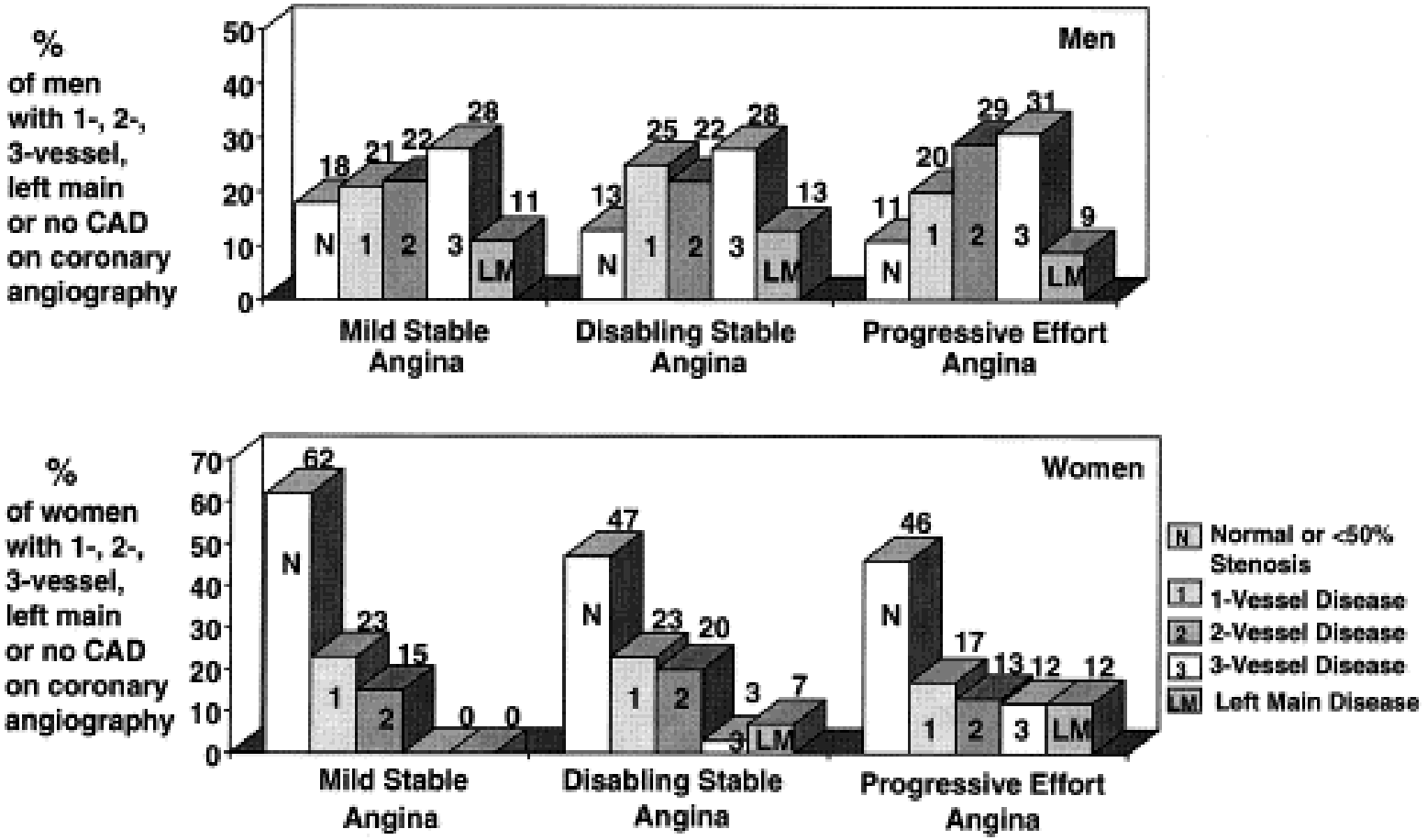
Clinical assessment

- H & P
- ecg
- cxr

Clinical assessment

- Diamond and Forrester
  - identifies likelihood of dz, but not severity

Clinical predictors of dz severity

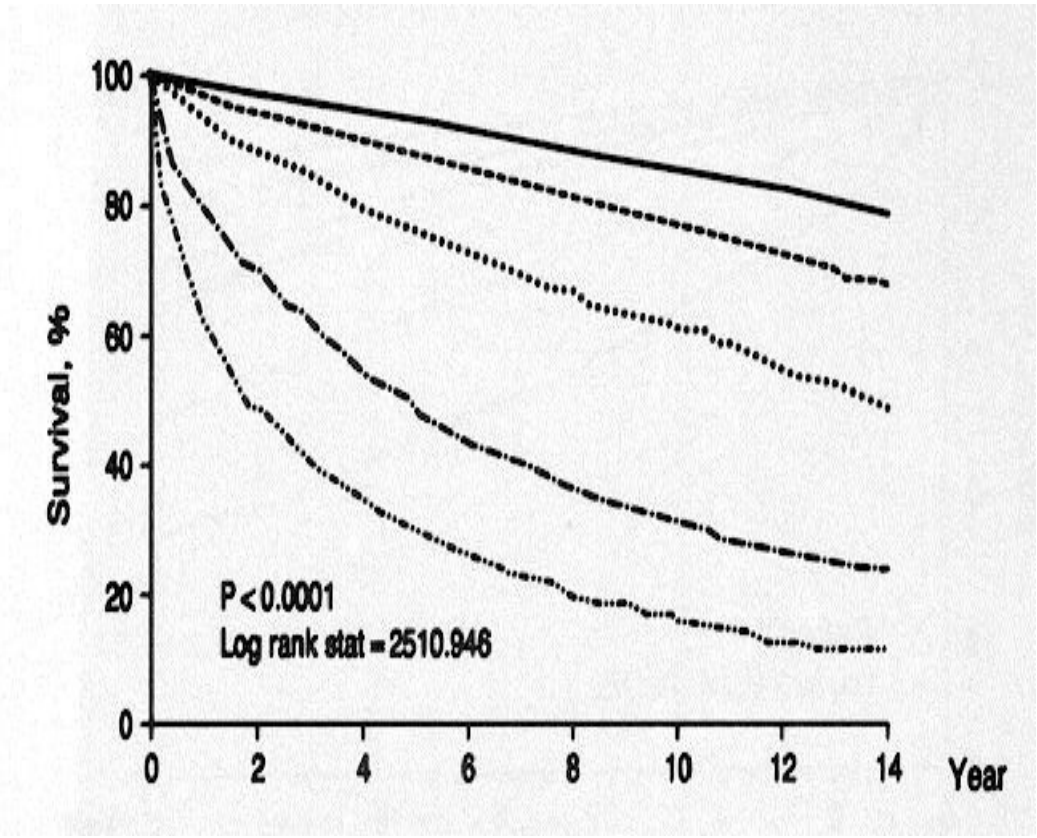


Clinical assessment: CHF score

- CASS registry pts
  - hx of chf
  - rales
  - digoxin use
  - diuretic use

- 1 point each

Clinical assessment:CHF score



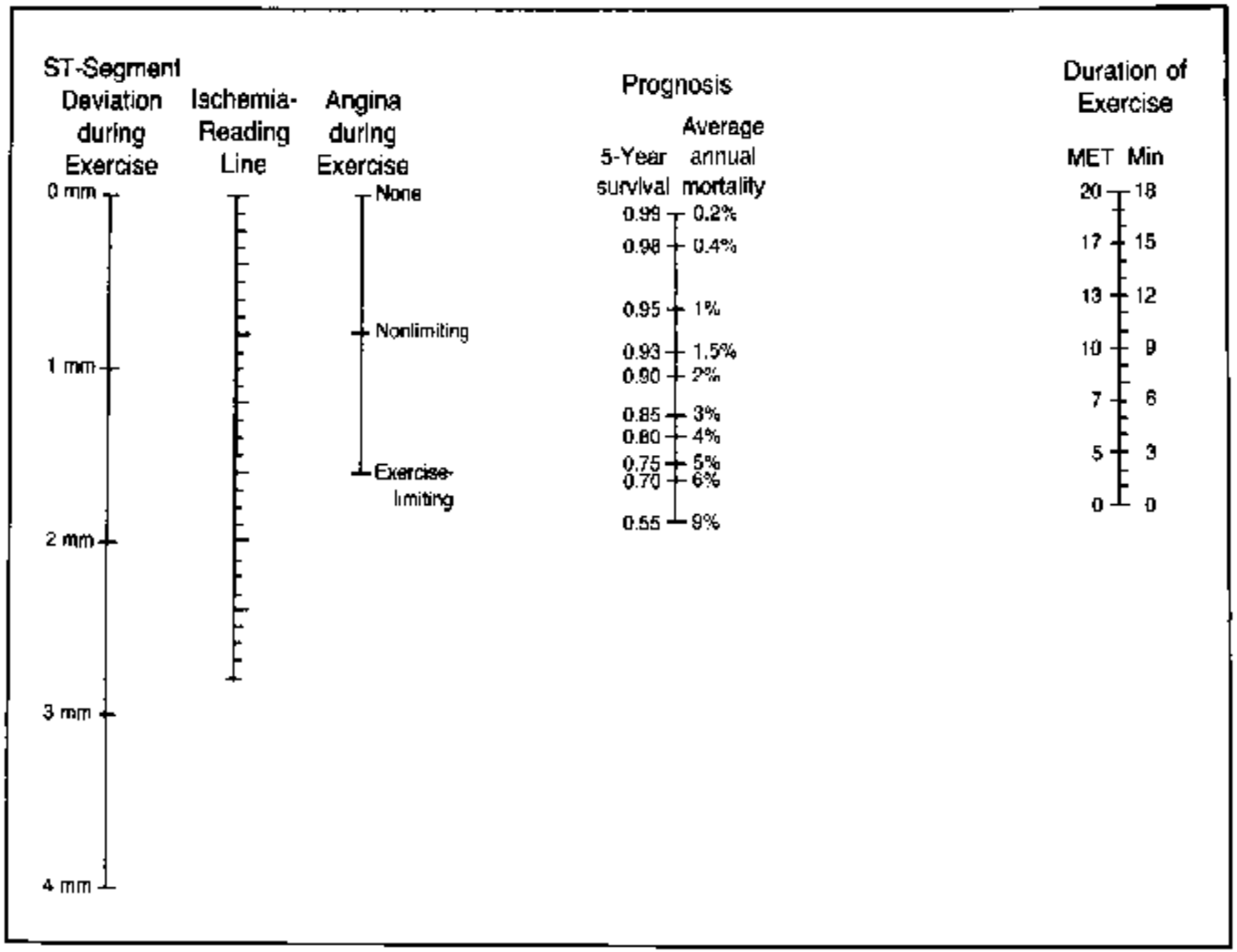
- 0: ~80%
- 1: ~70%
- 2: ~50%

- 3: ~25%
- 4: ~10%

Stress testing

- Exercise ECG
  - simple
  - available
  - extensively studied
- Important information
  - exercise capacity
  - severity of ischemia

Exercise ECG



(Mark et al, NEJM 19

Stress imaging

- Widely scattered data

	PPV	NPV
– nuclear med	~10%	~99%
– echo	~50%	~95%

Stress testing

- NPV good: normal test implies good prognosis
- PPV poor: unable to assess plaque stability.

Noninvasive risk indicators

- Low risk:
  - normal or small defect

- I/M risk:
  - EF 35-50%
  - moderate size defect

- High risk:
  - EF < 35%
  - large defect
  - multiple defects
  - lv dilation
  - lung uptake of thallium

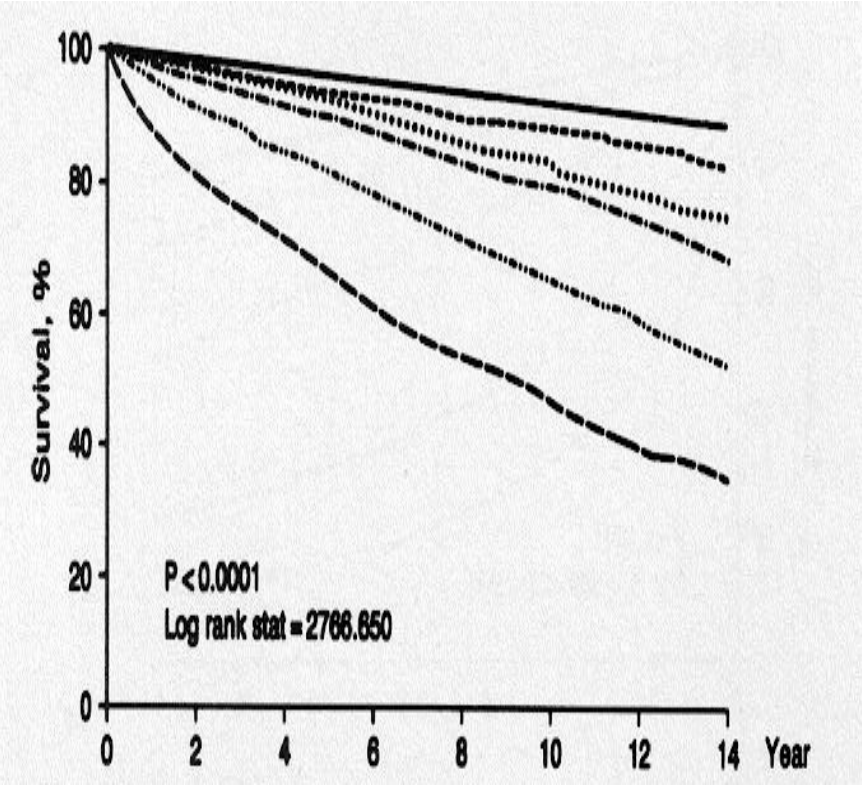
Use of gxt results

- “Low risk” (≤1%/yr)
  - medical mgt
- “Intermediate risk” (1-3%/yr)
  - imaging stress test
  - cath if depressed lvef
- “High risk” (>3%/yr)
  - cath

Cardiac cath

- Best predictor of long term outcome:
  - extent and severity of disease
  - lv function

12-yr survival: (med tx)

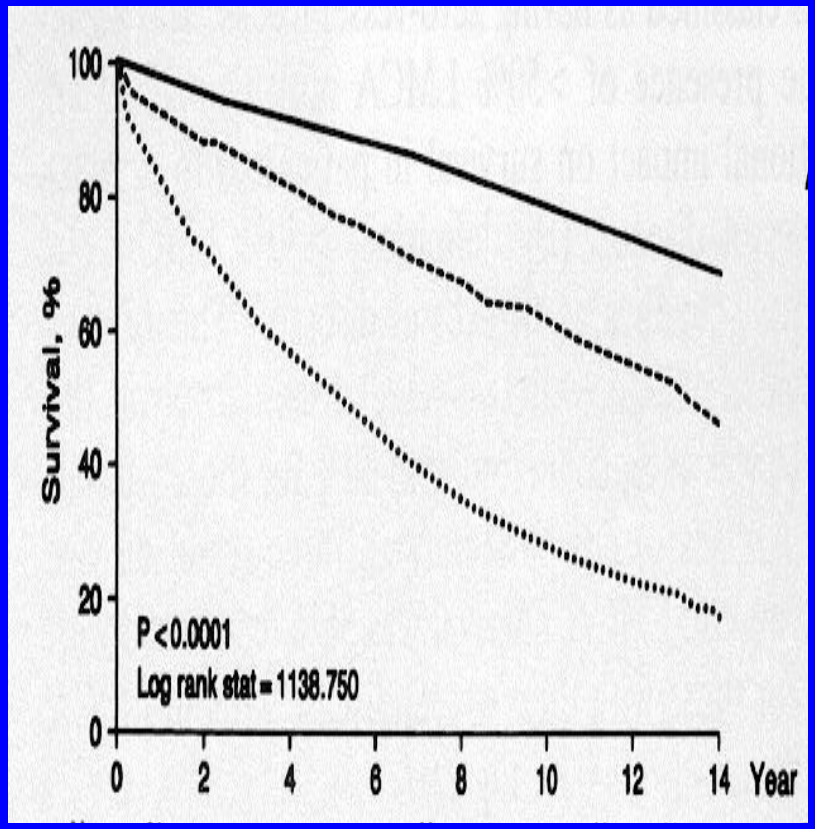


- Normal coronaries: ~90%

- 1-vessel dz: ~75%
- 2-vessel dz: ~60%
- 3-vessel dz: ~40%

(Circ,1994

12-yr survival: (med tx)

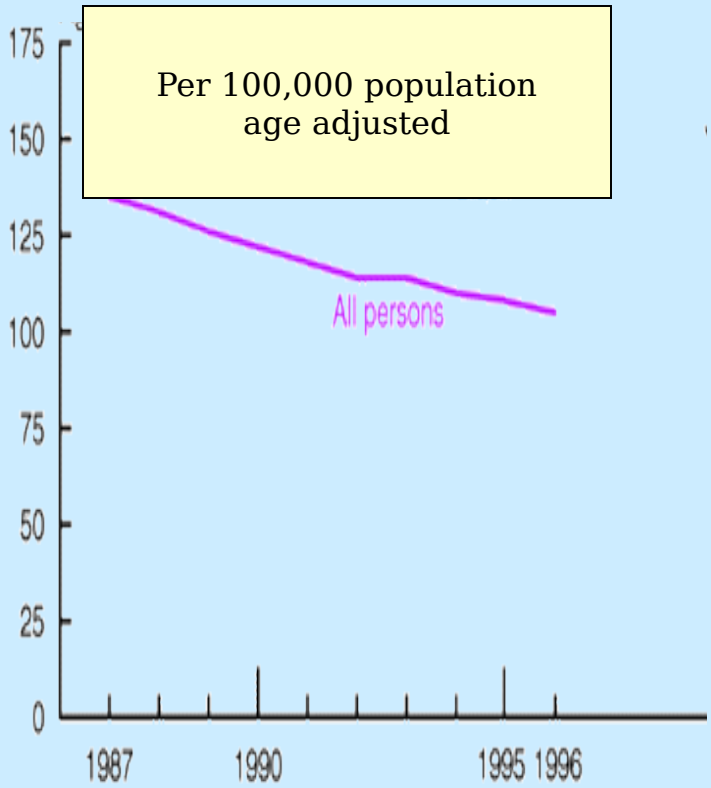


- Normal EF: ~75%
- EF 35-50: ~50%
- EF <35: ~20%

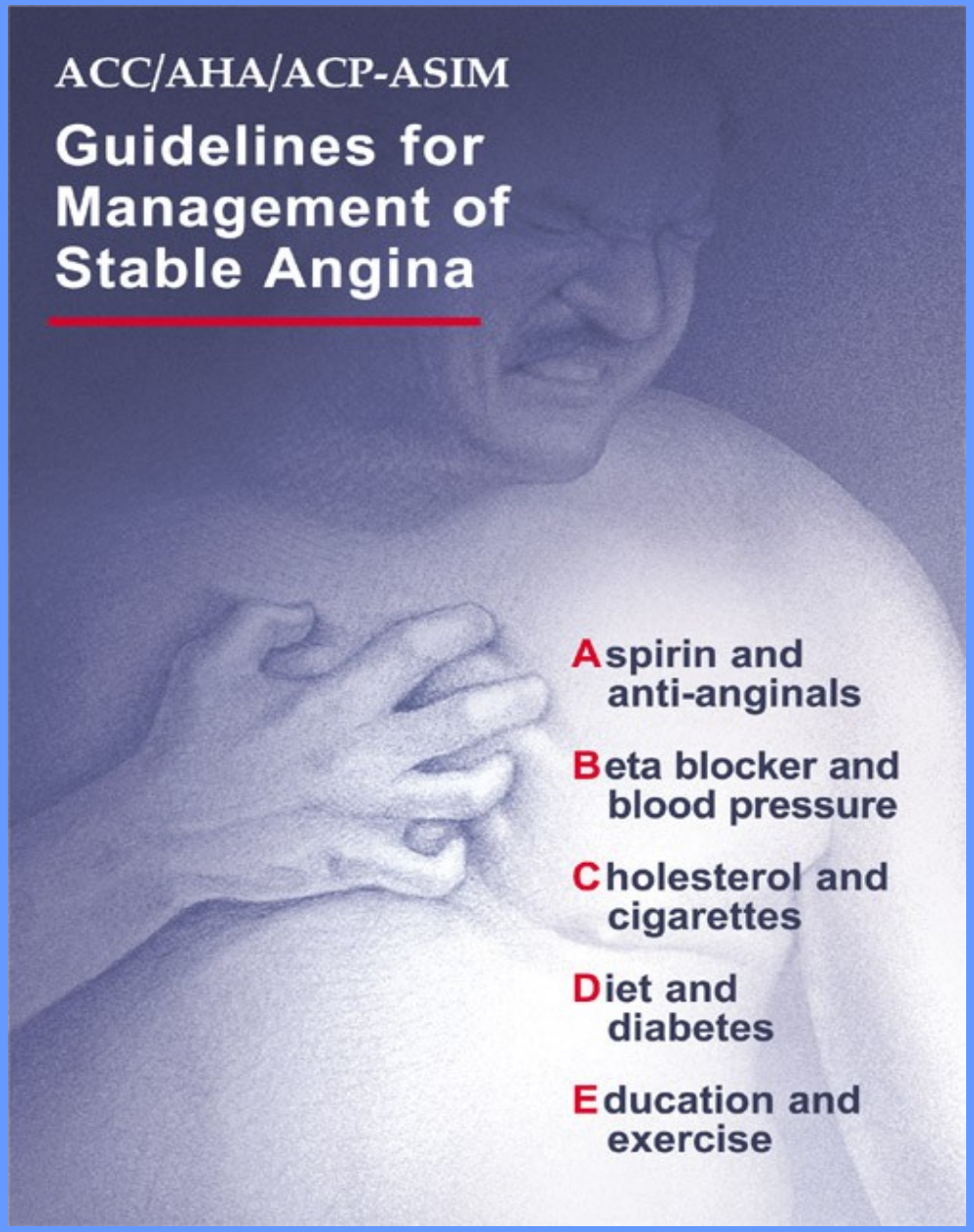
Reasons to revascularize

- Live longer:
  - LMCA dz
  - 3 vessel dz, depressed ef
  - 2, 3 vessel dz, proximal lad
- Feel better
  - angina refractory to meds

Coronary heart disease deaths



NOTE: Death rates are age adjusted to the 1940 U.S. standard population.
SOURCE: CDC/NCHS, National Vital Statistics System, 1987-1996



- JACC, June 99
- www.acc.org
- www.americanheart.org
- 1-800-253-4636